

### **Claim Amendments**

1. (Currently Amended) A method comprising:  
receiving a bit stream,  
generating a coded bit stream of N bits by encoding a first portion of K bits of the bit stream using low density parity check coding technique and an un-coded bit stream of N/3 bits from a second portion of the received bit stream,  
producing a combination by selecting at least ~~N~~ N1 bits from the coded bit stream and ~~N/3~~ N1/3 bits from the un-coded bit stream;  
determining a symbol, using a pulse amplitude modulation PAM-16 scheme, corresponding to the combination from a symbol set comprising at least sixteen symbols, wherein information bits in each symbol is based on a code rate determined using size of the first portion and size of the coded bit stream; and  
transmitting a signal corresponding to the symbol at a rate of at least 10 giga bits per second over a communication medium.
2. (Canceled).
3. (Canceled).
4. (Currently Amended) The method of claim 1, wherein the combination comprises four bits, wherein one bit is selected from the un-coded bit stream of N/3 bits and three bits are selected from the coded bit stream of N bits.
5. (Currently Amended) The method of claim 1, wherein determining the symbol comprises selecting the symbol based on a bit-to-symbol mapping table.

6. (Currently Amended) The method of claim 5, wherein ~~the~~ selecting comprises searching for a matching entry corresponding to the combination and producing the symbol corresponding to the matching entry.

7. (Currently Amended) The method of claim 1 further ~~comprising~~ comprises:  
 decoding a the coded bit stream to generate an extracted bit stream based on a reliability assignment corresponding to each bit of the coded bit stream, and  
 generating a bit stream representing data, and sending the bit stream.

8. (Currently Amended) The method of claim 7, wherein the reliability assignment values are chosen based on the bit position of the coded bit stream corresponding to the symbol being decoded and one or more pre-defined reliability assignment values.

9. (Currently Amended) An apparatus comprising:  
 a transmitter is arranged to receive an input bit stream, to generate a coded bit stream of N bits by encoding a first portion of K bits of the input bit stream using low density parity check coding technique and an un-coded bit stream of N/3 bits a second portion of the input bit stream, and to produce a combination by selecting at least ~~N~~ N1 bits from the coded bit stream and ~~N/3~~ N1/3 bits from the un-coded bit stream, to determine a symbol, using a pulse amplitude modulation PAM-16 scheme, corresponding to the combination from a symbol set, wherein the symbol set comprises at least sixteen symbols, wherein information bits in each symbol is based on a code rate determined using size of the first portion and size of the coded bit stream,

a receiver to demodulate based on a reliability assignment, and

a front end device to transmit a signal corresponding to the symbol at a rate of at least 10 giga bits per second over a communication medium.

10. (Currently Amended) The apparatus of claim 9 the transmitter further comprises a mapper, wherein the mapper is to receive the coded bit stream comprising N bits and the un-coded bit stream comprising N/3 bits.

11. (Currently Amended) The apparatus of claim 10 further comprises an encoder to generate N bits by encoding the first portion of K bits using low density parity check coding technique.

12. (Currently Amended) The apparatus of claim 9, wherein the ~~transmitter~~ ~~comprises the mapper~~ is to generate the combination by selecting one bit out of the N/3 bits and three bits out of the N bits.

13. (Currently Amended) The apparatus of claim 9, wherein the ~~transmitter~~ ~~comprises the mapper~~ is to determine the symbol by selecting the symbol based on the bit-to-symbol mapping table.

14. (Currently Amended) The apparatus of claim 13 the mapper ~~to select the symbol~~ further comprises a content addressable memory to search a matching entry corresponding to the combination and to produce the symbol corresponding to the matching entry.

15. (Currently Amended) The apparatus of claim 9 the receiver further ~~comprising~~ comprises:

a de-mapper, wherein the de-mapper is to generate a the coded bit stream and ~~an~~ the un-coded bit stream from a received signal;

a decoder to decode a coded bit stream to generate an extracted bit stream based on a reliability assignment values determined corresponding to each bit of the coded bit stream, and

a de-framer to generate a bit stream representing data.

16. (Currently Amended) The apparatus of claim 15, wherein the reliability assignment values are chosen based on the bit position of the coded bit stream corresponding to the symbol being decoded and one or more pre-defined reliability assignment values.

17. (Currently Amended) The apparatus of claim 9 ~~corresponds to~~ includes a transceiver.

18. (Currently Amended) A system comprising:

a network interface to generate and transfer a signal that is representative of a bit stream and that comprises symbols selected from at least one of sixteen symbols,

a processor to provide the network interface with the bit stream in response to executing instructions,

a memory to store the instructions executed by the processor,

the network interface further ~~comprising~~ comprises a transmitter to receive a bit stream, to generate a coded bit stream of N bits by encoding a first portion of K bits of the input bit stream using low density parity check coding technique and an un-coded bit stream of N/3 bits from a second portion of the bit stream ~~from the received bit stream~~, and to produce a combination by selecting at least ~~N~~ N1 bits from the coded bit stream and ~~N/3~~ N1/3 bits from the un-coded bit stream, to determine a symbol, using a pulse amplitude modulation PAM-16 scheme, corresponding to the combination from a symbol set, wherein the symbol set comprises at least sixteen symbols, wherein information bits in each symbol is based on a code rate determined using size of the first portion and size of the coded bit stream, and

a front end device to transmit a signal corresponding to the symbol at a rate of at least 10 giga bits per second over a communication medium.

19. (Currently Amended) The system of claim 18, wherein the network interface is to generate the signal as ~~an~~ a pulse amplitude modulated signal having a rate of at least 10 giga bits per second.

20. (Canceled).

21. (Currently Amended) The system of claim 19, ~~wherein~~ the transmitter further comprises a mapper, wherein the mapper is to receive ~~a first~~ the coded bit stream comprising N bits and ~~a second~~ the un-coded bit stream comprising N/3 bits.

22. (Currently Amended) The system of claim 19, wherein ~~the transmitter~~ comprises the mapper is to generate the combination by selecting one bit out of the N/3 bits and three bits out of the N bits.

23. (Currently Amended) The system of claim 19, wherein ~~the transmitter~~ comprises the mapper is to determine the symbol by selecting the symbol based on the bit-to-symbol mapping table.

24. (Currently Amended) The system of claim 19 the mapper ~~to select the symbol~~ further comprises a content addressable memory to search a matching entry corresponding to the combination and to produce the symbol corresponding to the matching entry.

25. (Currently Amended) The system of claim 19 the network interface further comprises a receiver comprising:

a de-mapper to generate a the coded bit stream and ~~an~~ the un-coded bit stream from a received signal;

a decoder to decode a the coded bit stream to generate an extracted bit stream based on reliability assignment values determined corresponding to each bit of the coded bit stream, and

a de-framer to generate a bit stream representing data.

26. (Original) The system of claim 19 the network interface includes a network interface card.

27. (Original) The system of claim 26 the network interface card includes logic capable of communicating at least in accordance with 10GBase-T standard.

28. (Canceled)